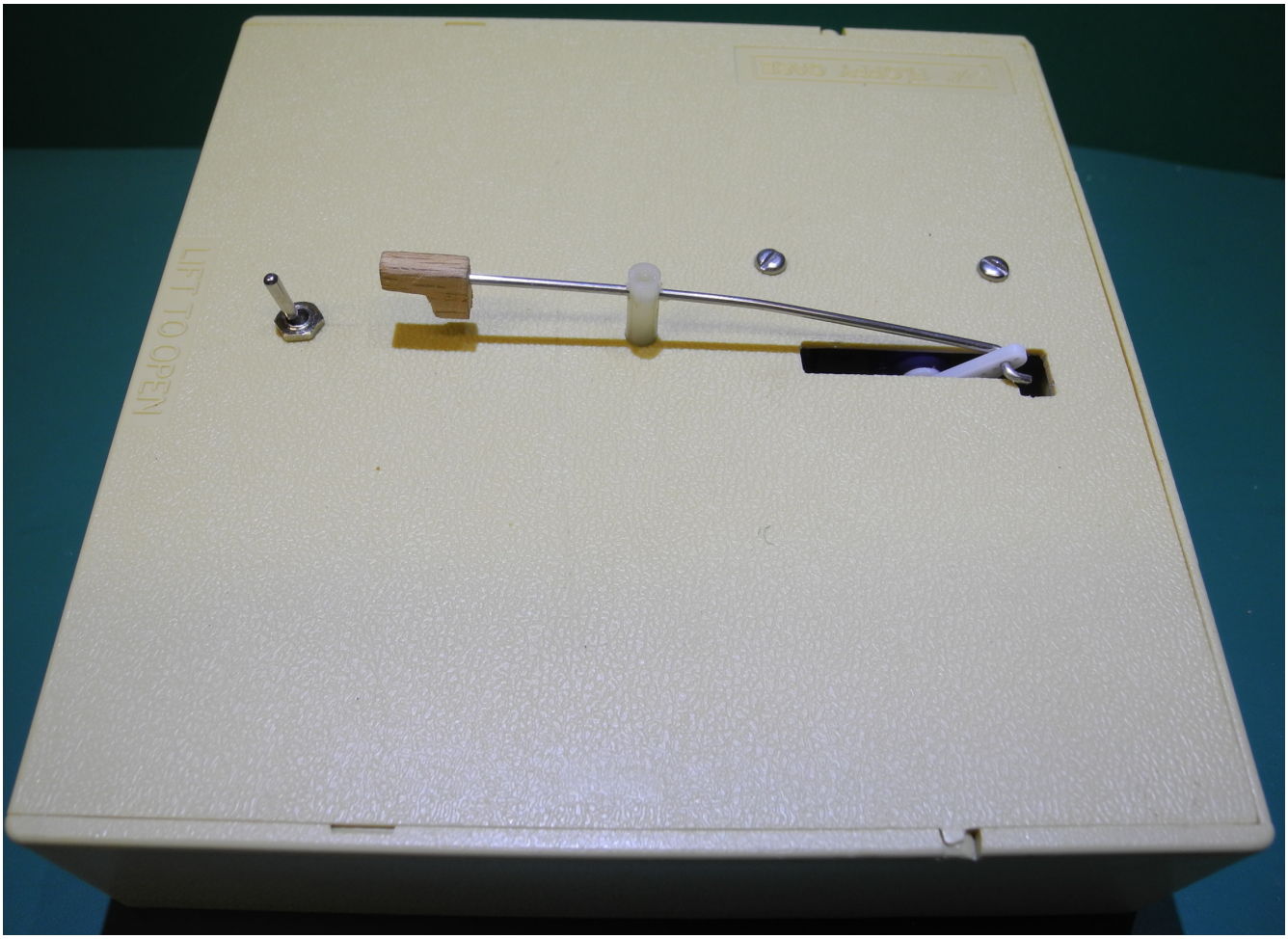
# A Useless Machine




**Sometimes it is a good idea to take a break from the serious and spend some time instead on the fun things in life. The Useless Machine, originally created by Marvin Minsky, is simple to build and fun to play with.**

**The useless machine consists of a spdt toggle switch with long lever and a rod with a "finger" attached to the end. Whenever the switch is flipped on by moving the lever, the "finger" moves from a parked position after a short delay and pushes the swith back to the off position. The machine really does nothing usefull, hence its name.**

**The project hardware components are very modest, you only need an Arduino Nano controller board, an spdt toggle switch, a hobby type servo motor and some miscellaneous parts for the rod, case, brackets**

**and so forth.**

**Building the useless machine only requires basic skills and the wiring effort is minimal. Most of the difficult work is mechanical in nature and involves preparing the case for the project, cutting and bending the actuating rod, and mounting the parts carefully.**

**To install the program on your Arduino Nano board, just download the useless.hex executable image from the repository and flash the file to the controller board with AVRdude. Connect the servo motor and toggle switch to the arduino board and the machine is almost ready to run. You have to tweak the servo parameters in the program to get the right amount of arm travel since variations in every project build affects the rod travel trajectory.**

**Brief specifications:**

- **IDP** — **Atmel Studio 7**
- **Language** — **AVR assembly**
- **Construction level** — **Easy**
- **Build time** — **About 1 or 2 evenings**
- **Microcontroller** — **ATmega328P, 16 MHz, 5 Vdc**
- **Platform** — **Arduino Nano controller board**
- **Control interface** — **One spdt toggle switch.**

**Other required software tools:**

- **PuTTY** — **SSH client (terminal interface only)**
- **AVRdude** — **For flashing useless.hex to your Arduino controller board**

**Features:**

- **Full source code is provided. Lots of interesting stuff.**

**Contact:**
**If you have questions, comments or suggestions, please send me email at lynf.yyz@gmail.com.**

**Please visit our website PLCCHIPS.com for more information on a number of practical projects aimed at deploying the Arduino microcontroller boards in a variety of interesting and useful applications. Check it out and enjoy!**